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| 09/695,253 | 10/25/2000 | Hang-woo Lee | 030681-248 | 2631 |

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BURNS DOANE SWECKER & MATHIS L L P
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER

DAY, MICHAEL HENRY

ART UNIT PAPER NUMBER

2879

DATE MAILED: 03/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/695,253

Applicant(s)
H. Lee, et al.

Examiner
Michael Day

Art Unit
2879



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Jan 14, 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☒ All b) ☐ Some* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 20) ☐ Other: _____

Art Unit: 2879

DETAILED ACTION

1. Amendment B, filed 14 January 2003, has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claim 3 is rejected under 35 U.S.C. 102(b) as being anticipated by Zimlich.

Referring to claim 3, Zimlich discloses a field emission display substantially as claimed.

See FIG. 3, 4, and respective portions of the specification. Zimlich discloses a field emission display including a front substrate (viewing layer 64), a rear substrate 56, a cathode lines (See FIG. 3, schematically represented by line from emitters 54 to voltage source V_s), electron emitters

Art Unit: 2879

(microtips 2) formed at regular intervals, anode lines 66a, 66b, 66c, phosphor 68a, 68b, ~~68c~~
 formed on the anode lines and extraction electrodes ^{72a, 72b, 72c} 19 parallel to the anode lines ^{68a, 68b, 68c} 9r, 9g, 9b.
focusing electrodes

4. Claims 3 and 4 are rejected under 35 U.S.C. 102(e) as being anticipated by Jager.

Referring to claim 4, Jager discloses a field emission display substantially as claimed. See FIG. 1, 2 and respective portions of the specification. Jager discloses a field emission display including a front substrate 6, a rear substrate 10, a cathode lines (see col. 1, lines 30-32, column cathode conductors, not shown), electron emitters (microtips 2) formed at regular intervals, anode lines 9r, 9g, 9b, phosphor 7r, 7g, 7b formed on the anode lines and extraction electrodes 19 parallel to the anode lines 9r, 9g, 9b.

Claim 3 is broader than claim 4. Consequently, claim 3 is rejected for the same reason as claim 4.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was

Art Unit: 2879

commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jager in view of Keesmann et al.

Referring to claim 2, Jager discloses a field emission display substantially as claimed. See FIG. 1, 2 and respective portions of the specification. Jager discloses a field emission display including a front substrate 6, a rear substrate 10, a cathode lines (see col. 1, lines 30-32, column cathode conductors, not shown), anode lines 9r, 9g, 9b phosphor 7r, 7g, 7b formed on the anode lines and extraction electrodes 19 parallel to the anode lines 9r, 9g, 9b. Jager does not disclose a field emission display including carbon nanotubes formed on the cathode lines. Keesmann et al. disclose a field emission display (see col. 7, lines 15-20) including carbon nanotubes 31 formed on the cathode lines providing stable emission (see col. 3, lines 35-40. It would have been obvious to form carbon nanotubes 31, as disclosed by Keesmann et al., in the display, as disclosed by Jager, for the advantage of providing stable emission.

Claim 1 is broader than claim 2. Consequently, claim 1 is rejected for the same reason as claim 2.

Art Unit: 2879

Response to Arguments

7. Applicant's arguments, filed 14 January 2003, have been fully considered but they are not persuasive.

Referring to the second and third full paragraphs on page 5 of Amendment B, filed 14 January 2003, the applicant alleges that because Jager discloses focusing conductive strips 19, 29 which provide a focusing effect, they do not constitute "extraction electrodes" as recited in the pending claims. The examiner is confused by this allegation because it is noted that in the instant FIG. 4, the extraction electrodes similarly provide a focusing effect. It is further noted that the potential voltages applied to the focusing and anode electrodes, disclosed by Zimlich, are substantially the same as the potentials disclosed in the instant invention as illustrated in FIG. 4. Furthermore, it noted that the function of the focusing and anode electrodes, disclosed by Zimlich, are substantially the same as the function of the "extraction electrode" disclosed in the instant invention as described in reference to FIG. 4. Aside, it is noted that electron trajectories are perpendicular to equal potential lines. Hence, the electron trajectories and equal potential lines illustrated in FIG. 4, 5 should form curvilinear squares.

Referring to page 6, the applicant further alleges that the present invention uses extraction electrodes to form a triode structure without the use of an additional grid. The examiner concurs, however, neither feature, the use of an extraction electrode to form a triode structure nor the absence of an additional grid, is specifically nor implicitly recited. As a courtesy to the applicant, and to expedite the issuance of the instant application, an after final amendment directed to the

Art Unit: 2879

instant claimed inventions use of the extraction electrode to form a triode structure, and/or the instant claimed inventions including an absence of an additional grid electrode, would be considered.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

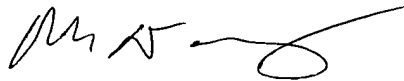
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Day whose telephone number is 703/305-4941. The examiner can normally be reached on Monday-Friday, from 8:00 A.M. to 5:00 P.M.

Art Unit: 2879

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar Patel, can be reached by phoning 703/305-4794. The Fax phone number is 703/308-7382.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is 703/308-0956.

March 4, 2003

A handwritten signature in black ink, appearing to read 'Michael Day', with a stylized flourish at the end.

MICHAEL DAY
PRIMARY EXAMINER
GROUP 2870